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17/ APPEAL BRIEF

IN THE U.S. PATENT AND TRADEMARK OFFICE

Application No.: 09/873,331	**Confirmation No.** 4162
Application of: GATI	**Group Art Unit:** 3712
Filing Date: June 5, 2001	**Examiner:** Jacob K. Ackun
Title: Cutting Tool Assembly	Old Atty Dkt. No. 10236-0027 New Atty Dkt. No. I084 1200

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

Dear Sir or Madam:

Further to the Notice of Appeal filed July 28, 2003, Applicant appeals the Final Rejection mailed April 4, 2003, and submits the present brief in triplicate, in support of the Appeal.

1. Real Party in Interest

The real party in interest is Iscar, Ltd., of Tefen, Israel, the assignee of the present application.

2. Related Appeals and Interferences

There are no related appeals or interferences.

3. Status of Claims

Claims 1 and 8 have been canceled. Claims 2-7 and 9-34 stand finally rejected and are the subject of the present Appeal.

4. Status of Amendments

A Request for Reconsideration was filed July 28, 2003 in response to the final rejection. However, no after-final amendments were submitted therein.

5. Summary of Invention

The present invention is directed to a cutting insert and also to a cutting tool assembly comprising a cutting insert holder and the cutting insert. With respect to the 'cutting tool assembly', all embodiments of the present invention recite structure that is shaped so as to permit sliding insertion (and removal) of the cutting insert along its longitudinal direction, into (and from) the front of the cutting insert holder. Insertion (and removal) of the cutting insert can be achieved by loosening one or more clamping screws 34 and inserting (or pulling out) the cutting insert along the cutting insert's longitudinal direction.

Independent claim 2 is directed to a cutting insert 24 that comprises a central body portion 46 extending between two opposite end portions 48, 50, each end portion being provided with a cutting edge 52. The central body 46 portion is provided with upper and lower clamping abutment surfaces 54, 56 with first and second side surfaces 58, 60 extending therebetween. At least one of the first and second side surfaces 58, 60 is provided with an axial location member, wherein the axial location member is a protrusion 62. (See Figs. 2-3c, page 7, lines 5-10).

Independent claim 9 is directed to a cutting tool assembly which includes a cutting insert holder 22 and a cutting insert 24. The cutting insert holder includes an upper clamping jaw 26

having an upper clamping surface 28, a lower base jaw 30 having a lower clamping surface 32, and an inner side surface 40 provided with a recess 44 that serves as a positioning member to determine the axial location of the cutting insert. (Figs. 1, 2 & 4a-4c, page 6, line 19 - page 7, line 4). The cutting insert 24 comprises a central body portion 46 extending in a longitudinal direction of the cutting insert between two opposite end portions 48, 50, each end portion being provided with a cutting edge 52. The central body 46 portion is provided with upper and lower clamping abutment surfaces 54, 56 with first and second side surfaces 58, 60 extending therebetween. At least one of the first and second side surfaces 58, 60 is provided with an axial location member, wherein the axial location member is a protrusion 62. (See Figs. 2-3c, page 7, lines 5-10). The recess 44 is configured to engage the protrusion 62 to fix the axial location of the cutting insert, the recess and protrusion being shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder along the longitudinal direction of the cutting insert. (Figs. 1 & 2, paragraph after page 7, line 12 added in amendment filed July 30, 2002).

The protrusion may be square-shaped. (Claims 3 & 10, Fig. 3a, page 7, lines 10-12).

The cutting insert can have 180° rotational symmetry about an axis that (a) is perpendicular to a longitudinal Plane P of the cutting insert, and (b) passes through the center of the protrusion. (Claims 4 & 11, Figs. 3a – 3c; page 7, lines 19-21).

The clamping abutment surfaces may be sloped from one side surface to the other such that the distance between the abutment surfaces is a maximum at one side surface and a minimum at the other side surface (claims 5 & 12, Fig. 7, page 8, lines 23-26), formed as V-shaped protrusions (claims 6 & 13, Fig. 8, page 9, lines 7-10), or formed as V-shaped grooves (claims 7 & 14, Fig. 9, page 9, lines 11-14).

The insert's protrusion may be spaced apart from the first and second clamping surfaces. (Claims 15 & 17, Fig. 2, paragraph after page 7, line 12 added in amendment filed July 30, 2002).

Furthermore, both side surfaces of the cutting insert may be provided with a protrusion. (Claims 16 & 18, Figs. 10a & 10b, page 9, lines 20-22). Figs. 10a & 10b of the present application show this embodiment wherein the two cutting edges 52 are both associated with the upper clamping surface. The protrusions on either side surface permit one to 'flip' the cutting insert around its vertical ('z') axis to switch from one cutting edge to other.

Independent claim 19 is directed to a cutting insert 66 that comprises a central body portion 46 extending in a longitudinal direction between two opposite end portions each end portion being provided with a cutting edge 52. The central body 46 portion is provided with upper and lower clamping abutment surfaces 54, 56 with first and second side surfaces 58, 60 extending therebetween. At least one of the first and second side surfaces 58, 60 is provided with an axial location member formed as an axially directed recess 70 that is open in the longitudinal direction. (Figs. 5-6b, page 8, lines 2-7).

Independent claim 23 is directed to a cutting tool assembly which includes a cutting insert holder 64 and a cutting insert 66. The cutting insert holder's side surface is provided with a positioning member in the form of a protrusion 68. (Fig. 5, page 8, lines 2-16). The protrusion 68 is configured to engage the axially directed recess 70 to thereby fix the axial location of the cutting insert, the recess and the protrusion being shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder along the longitudinal direction of the cutting insert. (Fig. 5, paragraph after page 8, line 16 added in amendment filed July 30, 2002).

The cutting insert's recess 70 may be spaced apart from the clamping abutment surface cutting edge (claims 20 & 24, Figs. 6a-6b, paragraph after page 8, line 16 added in amendment filed July 30, 2002).

The cutting insert may have axially directed recesses 70', 70'' on both side surfaces (claims 21 & 25, Figs. 11a-11b, page 9, lines 25-28).

The cutting insert may have two axially directed recesses 70 facing in opposite directions on the same side surface (claims 22 & 26, Figs. 6a-6b, page 8, lines 7-8).

Independent claim 27 is directed to a cutting insert 24, 66 that comprises a central body portion 46 extending in a longitudinal direction between two opposite end portions 48, 50, each end portion being provided with a cutting edge 52. The central body 46 portion is provided with sloped upper and lower clamping abutment surfaces 54, 56 (See Figs. 7-9, page 8, lines 21-24) which define therebetween a variable distance, the sloped upper and lower clamping surfaces having first and second side surfaces 58, 60 extending therebetween. At least one of the first and second side surfaces 58, 60 is provided with an axial location member 62, 70 that permits insertion of the cutting insert along the longitudinal direction. (Figs. 2, 3a-3c & 6, paragraphs after page 7, line 12 and page 8, line 16, both added in amendment filed July 30, 2002).

Independent claim 31 is directed to a cutting tool assembly which includes a cutting insert holder 22, 64 and a cutting insert 24, 66. The cutting insert holder's side surface is provided with a positioning member 44, 68. The axial location member and the positioning member are shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder along the former's longitudinal axis (Figs. 1-9).

In the cutting insert, the distance between the upper and lower clamping surfaces may be maximum at one side surface and a minimum at the other side surface (claims 28 & 32, Fig. 7, page 8, lines 23-26).

The upper and lower clamping surfaces may be formed as V-shaped protrusions (claims 29 & 33, Fig. 8, page 9, lines 7-10), or as a V-shaped grooves (claims 30 & 34, Fig. 9, page 9, lines 11-14).

6. Issues

All of the claims on appeal were rejected under 35 USC 103(a) as being unpatentable for being obvious over USP 4,509,886 to "Lindsay". Thus, the issue presented for review is whether or not claims 2-7 and 9-34 are unpatentable under 35 USC 103 over Lindsay.

7. Grouping of Claims

The claims on Appeal do not stand or fall together. For purposes of the present appeal, claims 2-7 and 9-34 are grouped as follows:

Group I: Claim 2, 4, 17

Group II: Claims 3, 10

Group III: Claims 5, 6, 7, 12, 13, 14, 28, 29, 30, 32, 33, 34

Group IV: Claims 9, 11, 15

Group V: Claims 16 & 18

Group VI: Claim 19

Group VII: Claims 20 & 24

Group VIII: Claim 21 & 25

Group IX: Claim 22 & 26

Group X: Claim 23

Group XI: Claim 27

Group XII: Claim 31

8. Argument

A. The Examiner's Rejection

The only reference relied upon by the Examiner to reject all claims on appeal was U.S. Patent No. 4,509,886 to Lindsay. The entirety of the Examiner's rejection of pending claims 2-7 and 9-34 reads as follows:

> Lindsay discloses most of the elements of the claims but for features such as the protrusion being on the insert and the corresponding recess being on the insert holder (Lindsay shows the reverse). Lindsay also does not teach the recess extending in a longitudinal direction and the clamping abutment surfaces of the insert being sloped. On the other hand it would have been obvious to provide the invention of Lindsay with the missing features for the purpose of more securely retaining the insert, to allow for easier insertion and removal of the insert, for design or aesthetic reasons, or depending on the particular application/insert desired. Reversing the surfaces on which a protrusion and recess are placed would not appear to be novel or unobvious, for example.

This rejection appeared first in the October 18, 2002 non-final rejection and was repeated, verbatim, in the April 4, 2003 final rejection. The Examiner provided neither a detailed explanation of how each feature in the pending claims was explicitly or inherently disclosed by Lindsay, nor did the Examiner point to any support in the prior art for the alleged motivations to modify Lindsay.

It is not at all apparent how and why each claim was rejected over Lindsay. This is in total contravention of 37 CFR 1.104(c)(2) which states, in pertinent part "The pertinence of each reference, if not apparent, must be clearly explained." And to the extent that the Examiner believes the various features in the pending claims to be "well known" and rejects the claims based on "common knowledge", it is submitted that the Examiner has not complied with the guidelines set forth in MPEP 2144.03.

B. The Lindsay '886 Reference

U.S. Patent No. 4,509,886 to Lindsay discloses a cutting tool comprising a tool holder and a cutting insert. The tool holder has a cutting insert receiving slot provided with a retaining lip 24, 74 that engages a face of the insert and prevents movement normal to its face. The cutting insert has a centrally disposed keyway extending fully across one face. In one embodiment, a hole 28 is formed in a wall of the insert receiving slot and a locating pin 26 is inserted into the hole. The pin 26 projects from the hole 28 into the insert retaining slot and engages the cutting insert's 32 keyway 38 to prevent longitudinal movement of the cutting insert 32 relative to the holder 12. In a second embodiment without such a pin, a lip 74 formed on an exterior wall of the tool holder engages a keyway 82 formed on the outer surface of a seated cutting insert 76.

In contrast to cutting tool assembly claims of the present invention, Lindsay does not disclose structure that is shaped so as to permit sliding insertion and removal of a cutting insert into an insert holder along the longitudinal direction of the cutting insert. In fact, Lindsay teaches away from sliding insertion of a cutting insert along its longitudinal direction and, in fact, teaches structures that would prevent longitudinal insertion of a cutting insert. In Lindsay's first embodiment, cutting insert 32 is provided with

> "a centrally disposed keyway 38 which extends fully across the face 40 of the insert. When the insert 32 is placed in the slot, the pin 26 engages the keyway 38 to locate the insert 32 longitudinally relative to the tool holder 12 and prevent longitudinal movement with respect thereto." (col. 2, lines 58-63). (Emphasis added).

And in Lindsay's second embodiment, cutting insert 76 is provided with

> "a centrally disposed keyway 82 which extends fully across the face 84. The keyway is formed such that its length 86 is precisely equal to the length 88 of the lip 74. The keyway 82 has a dimension 90 in the transverse direction of the holder (depth) precisely equal to the dimension 92 (thickness) of the lip 74 in the transverse direction. See FIG. 6. Thus, when the insert 76 is placed in the slot 66, the lip 74 engages the keyway 82 longitudinally to locate the insert relative to the holder 62 and

prevent longitudinal movement with respect thereto." (col. 3, lines 36-46). (Emphasis added).

Lindsay both discloses and claims[1] a cutting insert having a vertically extending keyway that prevents longitudinal movement of the cutting insert relative to the holder. More importantly, both of Lindsay's embodiments disclose and claim insert holder features (the "key" in claim 4 and the "lip" in claim 1) that clearly *prevent longitudinal insertion* of the cutting insert into the holder. In view of the vertical keyways on Lindsay's inserts, and the key and the lip on Lindsay's tool holders, it is apparent that Lindsay teaches away from cutting inserts provided with structures that allow for longitudinal insertion into, and removal from, a tool holder.

Moreover, Lindsay *requires* vertical insertion of a cutting insert into the insert retaining slot. In Lindsay's first embodiment (Figs 1, 2, 4 & 5), pin 26 projects into the insert receiving slot, and this necessitates insertion and removal of cutting insert 32 in a vertical direction. In order to enable longitudinal insertion or removal of Lindsay's insert, Lindsay's tool 10 would have to be suitably modified by removing the pin 26 each time one wished to exchange the cutting insert in the longitudinal direction. Not only is such a modification not taught by Lindsay; it is also impractical. And in Lindsay's second embodiment (Figs. 3, 6 and 7), tool holder lip 74 is surrounded on three sides by insert 76, thereby making it impossible to slide the cutting insert along its longitudinal direction and requiring that insert 76 be inserted into and removed from the tool holder in a vertical direction.

C. Arguments For Each Group Of Claims

Group I – Claims 2, 4 & 17

The cutting insert of claim 2 includes the following feature:

(1) first and second side surfaces, "at least one of the first and second side surfaces being provided with an axial location member, wherein the axial location member is a protrusion."

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[1] Lindsay's independent claims 1 and 4 both recite that the "centrally disposed keyway (extends) from the top to the bottom sides" of the cutting insert.

The Examiner concedes that Lindsay does not disclose a cutting insert having a protrusion, but argues that "reversing the surfaces on which a protrusion and recess are placed would not appear to be novel or unobvious."

To reverse Lindsay's keyway 38 and pin 26 would require one to (a) form a transversely extending hole in the cutting insert 32; and (b) insert a pin 26 into the newly formed transversely extending hole. However, there is no suggestion in Lindsay that this be done, nor is there any motivation to do so.

One skilled in the art would not be motivated to modify Lindsay's insert in such a manner because it would result in a cutting insert that is more costly to manufacture and more cumbersome to use. As explained by inventor Uzi Gati[2], this would result in costlier cutting inserts. The increased cost is due to the fact that *one manufactures far more inserts than holders* since the life of a cutting insert (whose cutting edges become worn with use) is far shorter than that of a holder (which will be used with a succession of cutting inserts). Thus, the Examiner's suggested modification that the hole be formed in each of Lindsay's cutting inserts (instead of in the holder) followed by insertion of the pin, would indeed result in greater total manufacturing costs[3] and it cannot be argued that any additional cost in manufacturing a cutting insert would be offset by a reduced cost in manufacturing a tool holder.[4]

Furthermore, lowering the cost of cutting inserts is certainly an object of Lindsay: "it is the primary object of the present invention to use . . . indexable and replaceable carbide inserts that are less expensive than inserts that have heretofore been available for use . . . It is a further object of the invention to . . .(use) indexable and replaceable carbide inserts that have a transversely extending keyway machined in one face. Such inserts are relatively inexpensive to manufacture." (Lindsay, col. 1, lines 19-28).

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[2] Declaration of Uzi Gati, ¶ 5, attached as Appendix B – the Declaration was submitted along with an amendment filed January 21, 2003.

[3] Even if the cost of providing the hole and pin for a single insert were the same as for a tool holder.

[4] On pages 2-3 of the April 4, 2003 final rejection, the Examiner had argued that "any increased cost (in the cutting insert) would be offset by a decreased cost for the holder 12, since the hole and pin would not be made therein."

In view of the stated objective of Lindsay to achieve lower cost, and further in view of the increased costs associated with providing a hole and pin in each cutting insert, it is submitted that one skilled in the art would not be motivated to reverse the keyway 38 and the pin 26, and so claim 2 is believed to define over Lindsay.

Group II -- Claims 3 & 10

These claims call for a cutting insert having a "square-shaped" protrusion.

In Lindsay's tool holder, the "transversely extending hole 28" and "pin 26" are circular. Lindsay discloses nothing about forming these with square-shaped cross-sections. Moreover, it is submitted that one skilled in the art would not be motivated to form the hole 28 and pin 26 with square-shaped cross-sections because of (a) increased cost in forming square-shaped, as opposed to circular, structures, and (b) increased complexity associated with inserting a square-shaped pin into a square-shaped hole.

Given that Lindsay says nothing about forming the hole and pin with a square-shaped cross-section, and further in view of the cost and complexity of employing such an arrangement, it is submitted that one skilled in the art, upon viewing Lindsay, would not find it obvious to modify Lindsay's insert to have a square-shaped hole and pin *even if a circular hole and pin were formed in Lindsay's cutting insert.*

Group III -- Claims 5, 6, 7, 12, 13, 14, 28, 29, 30, 32, 33, 34

These claims are directed to different possible geometries of the upper and lower clamping surfaces of upper and lower jaws of a cutting insert holder and of the upper and lower clamping abutment surfaces of a cutting insert. As is known to those skilled in the art, these geometries help facilitate (a) alignment of the cutting insert, relative to the insert holder's clamping jaws, while the insert is being inserted along its longitudinal direction, and (b) retention of a cutting held between the clamping jaws, by preventing the cutting insert from moving in a direction normal to its side surfaces, during use.

Though its figures show a cutting insert with a flat upper side 48 and an insert receiving slot with a flat bottom 18, Lindsay makes no mention of the geometry of its insert's upper and lower clamping abutment surfaces.

Lindsay's cutting insert 32 has a face 40 provided with a keyway 38. The cutting insert 32 is receivable in an insert receiving slot provided with a retaining "lip 24 (which) engages the opposite face 42 to prevent movement of the insert normal to such face, that is, normal to the (insert receiving slot's) walls 20, 22." (Lindsay, col. 2, lines 63-66). To the extent that Lindsay discloses vertical insertion of a cutting insert and a lip 24 that prevents movement in a direction normal to the side surfaces of a cutting insert, Lindsay teaches away from a cutting insert having upper and lower clamping surfaces provided with any of the claimed geometries.

In view of the foregoing, it is submitted that one skilled in the art would not be motivated to modify Lindsay's clamping surfaces to have any of the claimed geometries which, like lip 24, would serve to prevent movement of a cutting insert normal to its side surfaces.

Group IV – Claims 9, 11 & 15

The tool assembly of claim 9 includes the following combination of features:

(1) a cutting insert having first and second side surfaces, at least one of which is provided with "an axial location member, wherein the axial location member is a protrusion."

(2) an insert holder having a "positioning member" in the form of "a rear surface of a recess in the insert holder inner side surface"; and

(3) "the protrusion and the recess being shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder, along the longitudinal direction of the cutting insert." (emphasis added).

The arguments set forth above with respect to the Group I claims (i.e., claims 2, 4 and 17) apply to the claims of this Group. Accordingly, Lindsay neither discloses nor renders obvious a cutting insert having first and second surfaces, as least one of which is provided with an axial location member in the form of a protrusion. Additionally, Lindsay does not disclose a recess in an insert holder side surface.[5]

[5] The 04/04/03 final rejection concedes that "Lindsay also does not teach the recess extending in a longitudinal direction"

Furthermore, it is submitted that one skilled in the art would not be motivated to modify Lindsay to arrive at the invention of claim 9. In contrast to pending claim 9, Lindsay discloses insertion of a cutting insert into a receiving slot in a vertical direction, i.e., a direction that is *transverse to the longitudinal direction* of the cutting insert. More significantly, Lindsay teaches structure that prevents longitudinal movement between the protrusion (i.e., Lindsay's pin 26 or lip 74) and the recess (i.e., Lindsay's keyway 38 or keyway 82) and, to this extent, teaches away from a protrusion and a recess being shaped to "permit sliding insertion and removal of the cutting insert . . .along the longitudinal direction of the cutting insert".

In this regard, it is noted that Lindsay's first embodiment[6] (Figs. 1, 2, 4 & 5) says that the "locating key or pin 26" prevents longitudinal movement of the cutting insert:

- "The key engages the keyway of the insert longitudinally to locate the insert relative to the holder and to prevent longitudinal movement with respect thereto."[7]
- "The key locates the insert relative to the holder and prevents longitudinal movement with respect thereto."[8]
- the pin (26) engages the keyway (38) to prevent longitudinal movement with respect thereto."[9]
- "the key engaging the keyway longitudinally to prevent movement thereof in the direction of the longitudinal axis of the holder"[10]

Similarly, Lindsay's Second Embodiment[11] (Figs. 3, 6 & 7) states that the "retaining lip 74" prevents longitudinal movement of the cutting insert:

- "The lip engages the keyway longitudinally to locate the insert relative to the holder and to prevent longitudinal movement with respect thereto"[12]
- "Thus, with the insert 76 is placed in the slot 66, the lip 74 engages the keyway 82 longitudinally to prevent longitudinal movement with respect thereto."[13]

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6 Lindsay, col. 2, line 32 - col. 3, line 15.
7 Lindsay, "Summary of the Invention", col. 1, lines 66-68
8 Lindsay, "Summary of the Invention", col. 2, lines 6-8
9 Lindsay, "Detailed Description of the Preferred Embodiments", col. 2, lines 60-63 and again at col. 3, lines 9-12
10 Lindsay, independent claim 4, col. 5, line 15 - col. 6, line 1
11 Lindsay, col. 3, lines 16-62.
12 Lindsay, "Summary of the invention, col. 1, lines 59-62
13 Lindsay, "Detailed Description of the Preferred Embodiments", col. 3, lines 43-46

- "the lip engaging the keyway longitudinally to prevent movement thereof in the direction of the longitudinal axis of the holder"[14]

Thus, for both of Lindsay's embodiments:

(a) The figures show arrangements which prevent longitudinal insertion and removal of a cutting insert;

(b) The "Summary of the Invention" states that the structure prevents longitudinal movement;

(c) The "Detailed Description" states that the structure prevents longitudinal movement; and

(d) The independent claims recite that the structure prevents longitudinal movement.

In view of all the foregoing, it is submitted that one skilled in the art would not be motivated to modify Lindsay in a manner that would *permit* longitudinal insertion and removal of a cutting insert into a tool holder, since this would totally contradict a prominent feature in Lindsay (*See* Declaration of Uzi Gati, ¶ 7, attached in Appendix B).

Group V – Claims 16 & 18

These claims recite that "both the first and second side surfaces of the cutting insert are provided with a protrusion." Figs. 10a & 10b of the present application show this embodiment wherein the two cutting edges 52 are both associated with the upper clamping surface. The protrusions on either side surface permit one to rotate the cutting insert around its vertical ('z') axis to switch from one cutting edge to the other.

Lindsay neither discloses, nor renders obvious, these claims.

First, Lindsay does not disclose the pin 26 protruding from both sides of hole 28 formed in the tool holder, and so there is no reason to believe that, even if the hole and pin were formed in Lindsay's cutting insert 32, the pin 26 would project from both faces 40 and 42.

[14] Lindsay, independent claim 1, col. 4, lines 33-37

Second, there is no motivation to modify the pin 26 so that it projects from both faces 40 and 42 of Lindsay's cutting insert 32. This is because the cutting edges 52 of Lindsay's insert are associated with different clamping surfaces – one associated with upper side 48 and the other with lower side 34. And since one does not rotate the Lindsay cutting insert around its vertical ('z') axis to switch from one cutting edge to another, there is no need for the pin to project from both faces 40 and 42.

Given that Lindsay does not disclose a pin that protrudes on both sides of either an insert holder or a cutting insert, and also given that there is no need for a pin to project on both faces, it is submitted that these claims are patentable over Lindsay.

Group VI: Claim 19

The cutting insert of claim 19 includes the following feature:

(1) "a central body portion extending in a longitudinal direction of the cutting insert . . . the central body portion being provided with first and second side surfaces . . . at least one of the first and second side surfaces being provided with an axial location member formed as an axially directed recess open in said longitudinal direction." (emphasis added).

Lindsay's cutting insert does not disclose an "axially directed recess open in said longitudinal direction". Lindsay's cutting inserts 24, 76 are each provided with a vertical keyway 38, 82[15], respectively, that extends from the upper clamping surface to the lower clamping surface, in a vertical direction. As seen in Figs. 5 (Lindsay's insert 24) and Figs. 3 & 7 (Lindsay's insert 76), the keyways are not open in the longitudinal direction.

It is further submitted that one skilled in the art would not be motivated to modify the vertical keyways in Lindsay's cutting insert to make them "open in (the) longitudinal direction" either (a) by rotating them 90° so that they would be oriented in the longitudinal direction, or (b)

[15] The final rejection does not explicitly explain how or why claim 19 is obvious in view of Lindsay. For the purposes of this appeal, it will be assumed that the Examiner treats Lindsay's keyway to be the claimed "recess".

by forming a longitudinal channel in the face 40, 84 of the cutting insert that connects to the keyway 38, 82, respectively. This is because doing either would frustrate a function of the keyway 38, 82, which is to prevent longitudinal movement of the current insert relative to the insert holder.

In view of the foregoing, it is submitted that claim 19 is patentable over Lindsay.

Group VII: Claims 20 & 24

These claims recite that the "axially directed recess is spaced apart from the upper and lower clamping abutment surfaces."

Lindsay's keyway 38, which is oriented in a vertical direction, intersects Lindsay's upper side 48 and lower side 34, and so cannot be spaced apart therefrom. The same holds for Lindsay's keyway 82.

Accordingly, it is submitted that claims 20 and 24 are patentable over Lindsay.

Group VIII: Claim 21 & 25

These claims recite that "both the first and second side surfaces of the cutting insert are provided with an axially directed recess." Figs. 11a & 11b of the present application show this embodiment wherein the two cutting edges 52 are both associated with the upper clamping surface. The recesses on either side surface permit one to rotate the cutting insert around its vertical ('z') axis to switch from one cutting edge to other.

Lindsay does not disclose keyways on both faces of either of its cutting inserts 32, 76.

It is further submitted that there is no motivation to modify Lindsay's cutting inserts to have keyways on both faces. This is because the cutting edges 52 of Lindsay's cutting inserts 32, 76 are associated with different clamping surfaces – one associated with the upper side 48, 98 while the other is associated with the lower side 34, 78. And since one does not rotate either of

Lindsay's cutting inserts around its vertical ('z') axis to switch from one cutting edge to another, there is no need for keyways 38, 82 to be formed on both faces.

Accordingly, it is submitted that claims 21 and 25 are patentable over Lindsay.

Group IX: Claim 22 & 26

These claims recite that "at least one of the first and second side surfaces is provided with two axially directed recesses", a feature seen in Figs. 6a and 6b of the present application.

Lindsay does not disclose two keyways (or recesses) in either of its embodiments.

It is further submitted that nothing in Lindsay would motivate one skilled in the art to modify the Lindsay inserts to have two such recesses on the same face, each recess being open in the longitudinal direction.

Accordingly, it is submitted that claims 22 and 26 are patentable over Lindsay.

Group X: Claim 23

The tool assembly of claim 23 includes the following combination of features:

(1) a cutting insert having "a central body portion extending in a longitudinal direction of the cutting insert . . . the central body portion being provided with first and second side surfaces . . . at least one of the first and second side surfaces being provided with an axial location member formed as an axially directed recess open in said longitudinal direction." (emphasis added);

(2) an insert holder having an insert holder inner side surface "provided with a positioning member" in the form of "a protrusion"; and

(3) "the axially directed recess and the protrusion being shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder, along the longitudinal direction of the cutting insert." (emphasis added).

The arguments regarding the orientation of Lindsay's keyway ("recess"), as set forth above with respect to the Group VI claims (i.e., claim 19), also apply to the claims of this Group. Lindsay does not disclose a cutting insert having "an axially directed recess open in said longitudinal direction", and there is no motivation to modify Lindsay's cutting insert to have such a feature.

The arguments regarding structures that "permit sliding insertion and removal . . . along the longitudinal direction of the cutting insert", as set forth above with respect to the Group IV claims (i.e., claim 9) also apply to the claims of this Group. Lindsay does not disclose, and in fact teaches away from, a cutting tool assembly in which an axially directed recess and a protrusion are "shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder, along the longitudinal direction of the cutting insert". Accordingly, there is no motivation to modify Lindsay's cutting tool assembly to have this feature.

Group XI: Claim 27

The cutting insert of claim 27 includes the following feature:

(1) "a central body portion extending in a longitudinal direction of the cutting insert . . . the central body portion being provided with sloped upper and lower clamping abutment surfaces . . . having first and second side surfaces . . . at least one of the first and second side surfaces being provided with an axial location member . . . shaped so as to permit insertion of the cutting insert along said longitudinal direction." (emphasis added)

The arguments regarding the geometries of the upper and lower clamping surfaces, as set forth above with respect to the Group III claims (i.e., claims 5, 6, 7, 12, 13, 14, 28, 29, 30, 32, 33, 34), also apply to the claims of this Group. In particular, Lindsay does not disclose "sloped upper and lower clamping abutment surfaces" and there is no motivation to modify Lindsay's cutting inserts to have this feature.

In addition, Lindsay does not disclose "an axial location member . . . shaped so as to permit insertion of the cutting insert along said longitudinal direction." Lindsay's keyways 38, 82 serve as axial location members that prevent longitudinal movement of the cutting insert, as

discussed above with respect to the claims of Group IV and Group X. And in view of pin 26 and retaining lip 74, Lindsay's keyways 38, 82 actually prevent insertion of the cutting inserts 32, 76, respectively, along their longitudinal directions. Accordingly, it is submitted that one skilled in the art would not be motivated to modify Lindsay's inserts 32, 76 so that keyways 38, 82, respectively, permit insertion along the cutting insert's longitudinal direction.

Group XII: Claim 31

The cutting tool assembly of claim 31 includes the following features:

(1) a cutting insert having "a central body portion extending in a longitudinal direction of the cutting insert . . . the central body portion being provided with sloped upper and lower clamping abutment surfaces . . . having first and second side surfaces . . . at least one of the first and second side surfaces being provided with an axial location member . . . shaped so as to permit insertion of the cutting insert along said longitudinal direction";

(2) an insert holder having an insert holder inner side surface "provided with a positioning member"; and

(3) wherein the axial location member and the positioning member are shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder, along said longitudinal direction. (emphasis added)

The arguments regarding the geometries of the upper and lower clamping surfaces, as set forth above with respect to the Group III claims (i.e., claims 5, 6, 7, 12, 13, 14, 28, 29, 30, 32, 33, 34), also apply to the claims of this Group. In particular, Lindsay does not disclose a cutting insert having "sloped upper and lower clamping abutment surfaces" and there is no motivation to modify Lindsay's cutting inserts to have this feature.

Additionally, the arguments regarding structures that are "shaped so as to permit sliding insertion and removal . . . along the longitudinal direction of the cutting insert", as set forth above with respect to the claims of Group IV & Group X (i.e., claims 9 & 23) also apply to the

claims of this Group. Lindsay does not disclose, and in fact teaches away from, a cutting tool assembly in which an axial location member and a positioning member are "shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder, along the longitudinal direction of the cutting insert". Accordingly, there is no motivation to modify Lindsay's cutting tool assembly to have this feature.

In view of all the foregoing, it is submitted that the Examiner's final rejection of claims 2-7 and 9-34 is unfounded and should be reversed.

Respectfully Submitted,

Date: October 9, 2003

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Appendix A - Pending Claims

2. A cutting insert comprising a central body portion extending between two opposite end portions, each end portion being provided with a cutting edge; the central body portion being provided with upper and lower clamping abutment surfaces with first and second side surfaces extending therebetween; at least one of the first and second side surfaces being provided with an axial location member, wherein the axial location member is a protrusion.

3. A cutting insert in accordance with Claim 2, wherein the protrusion is square shaped.

4. A cutting insert in accordance with Claim 2, having a 180° rotational symmetry about an axis perpendicular to a longitudinal plane (P) of the cutting insert and passing through the center of the protrusion.

5. A cutting insert in accordance with Claim 2, wherein the upper and lower clamping abutment surfaces are sloped, defining therebetween a variable distance so that when the cutting insert is viewed in an end view the distance between the upper and lower clamping abutment surfaces is a maximum at the first side surface and a minimum at the second side surface.

6. A cutting insert in accordance with Claim 2, wherein the upper and lower clamping abutment surfaces have the form of V-shaped protrusions.

7. A cutting insert in accordance with Claim 2, wherein the upper and lower clamping abutment surfaces have the form of V-shaped grooves.

9. A cutting tool assembly comprising:

a cutting insert holder; and

a cutting insert;

the cutting insert holder comprising:

an upper clamping jaw having an upper clamping surface;

a lower base jaw having a lower clamping surface;

an insert holder inner side surface extending between the upper and lower clamping surfaces; and

an insert pocket bound on two opposite sides by the upper and lower clamping surfaces and bound on a third side extending between the two opposite sides by the insert holder inner side surface; the insert holder inner side surface being provided with a positioning member;

the cutting insert comprising:

a central body portion extending in a longitudinal direction of the cutting insert between two opposite end portions, each end portion being provided with a cutting edge; the central body portion being provided with upper and lower clamping abutment surfaces with first and second side surfaces extending therebetween; at least one of the first and second side surfaces being provided with an axial location member;

wherein the upper clamping abutment surface is configured to abut the upper clamping surface; the lower clamping abutment surface is configured to abut the lower clamping surface and the positioning member is configured to engage the axial location member to thereby fix the axial location of the cutting insert; and

wherein the axial location member is a protrusion and the positioning member is a rear surface of a recess in the insert holder inner side surface, the protrusion and the recess being shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder, along the longitudinal direction of the cutting insert.

10. A cutting tool assembly in accordance with Claim 9, wherein the protrusion is square-shaped.

11. A cutting tool assembly in accordance with Claim 9, wherein the cutting insert has a 180° rotational symmetry about an axis perpendicular to a longitudinal plane (P) of the cutting insert and passing through the center of the protrusion.

12. A cutting tool assembly in accordance with Claim 9, wherein the upper and lower clamping abutment surfaces are sloped, defining therebetween a variable distance, so that when the cutting insert is viewed in an end view the distance between the upper and lower clamping abutment surfaces is a maximum at the first side surface and a minimum at the second side surface and the upper and lower clamping surfaces of the upper clamping jaw and the lower base jaw, respectively, are matchingly sloped.

13. A cutting tool assembly in accordance with Claim 9, wherein the upper and lower clamping abutment surfaces have the form of V-shaped protrusions and the upper and lower clamping surfaces of the upper clamping jaw and the lower clamping jaw, respectively, have the form of matching V-shaped grooves.

14. A cutting tool assembly in accordance with Claim 9, wherein the upper and lower clamping abutment surfaces have the form of V-shaped grooves and the upper and lower clamping surfaces of the upper clamping jaw and the lower clamping jaw, respectively, have the form of matching V-shaped protrusions.

15. A cutting tool assembly in accordance with Claim 9, wherein the protrusion is spaced apart from the upper and lower clamping abutment surfaces.

16. A cutting tool assembly in accordance with Claim 9, wherein both the first and second side surfaces of the cutting insert are provided with a protrusion.

17. A cutting insert in accordance with Claim 2, wherein the protrusion is spaced apart from the upper and lower clamping abutment surfaces.

18. A cutting insert in accordance with Claim 2, wherein both the first and second side surfaces are provided with a protrusion.

19. A cutting insert comprising a central body portion extending in a longitudinal direction of the cutting insert between two opposite end portions, each end portion being provided with a cutting edge; the central body portion being provided with upper and lower clamping abutment surfaces with first and second side surfaces extending therebetween; at least one of the first and second side surfaces being provided with an axial location member formed as an axially directed recess open in said longitudinal direction.

20. A cutting insert in accordance with Claim 19, wherein the axially directed recess is spaced apart from the upper and lower clamping abutment surfaces.

21. A cutting insert in accordance with Claim 19, wherein both the first and second side surfaces are provided with an axially directed recess.

22. A cutting insert in accordance with Claim 19, wherein said at least one of the first and second side surfaces is provided with two axially directed recesses facing in opposite directions.

23. A cutting tool assembly comprising:

a cutting insert holder; and

a cutting insert;

the cutting insert holder comprising:

an upper clamping jaw having an upper clamping surface;

a lower base jaw having a lower clamping surface;

an insert holder inner side surface extending between the upper and lower clamping surfaces; and

an insert pocket bound on two opposite sides by the upper and lower clamping surfaces and bound on a third side extending between the two opposite sides by the insert holder inner side surface; the insert holder inner side surface being provided with a positioning member;

the cutting insert comprising:

a central body portion extending in a longitudinal direction of the cutting insert between two opposite end portions, each end portion being provided with a cutting edge; the central body portion being provided with upper and lower clamping abutment surfaces with first and second side surfaces extending therebetween; at least one of the first and second side surfaces being provided with an axial location member;

wherein the upper clamping abutment surface is configured to abut the upper clamping surface; the lower clamping abutment surface is configured to abut the lower clamping surface and the positioning member is configured to engage the axial location member to thereby fix the axial location of the cutting insert; and

wherein the axial location member is an axially directed recess open in said longitudinal direction and the positioning member is a protrusion on the insert holder inner side surface, the axially directed recess and the protrusion being shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder, along said longitudinal direction.

24. A cutting tool assembly in accordance with Claim 23, wherein the axially directed recess is spaced apart from the upper and lower clamping abutment surfaces.

25. A cutting tool assembly in accordance with Claim 23, wherein both the first and second side surfaces are provided with an axially directed recess.

26. A cutting tool assembly in accordance with Claim 23, wherein said at least one of the first and second side surfaces is provided with two axially directed recesses facing in opposite directions.

27. A cutting insert comprising a central body portion extending in a longitudinal direction of the cutting insert between two opposite end portions, each end portion being provided with a cutting edge; the central body portion being provided with sloped upper and lower clamping abutment surfaces which define therebetween a variable distance, the sloped upper and lower clamping abutment surfaces having first and second side surfaces extending therebetween; at least one of the first and second side surfaces being provided with an axial location member, wherein the axial location member is shaped so as to permit insertion of the cutting insert along said longitudinal direction.

28. A cutting insert in accordance with Claim 27, wherein, when the cutting insert is viewed in an end view, the distance between the upper and lower clamping abutment surfaces is a maximum at the first side surface and a minimum at the second side surface.

29. A cutting insert in accordance with Claim 27, wherein the upper and lower clamping abutment surfaces have the form of V-shaped protrusions.

30. A cutting insert in accordance with Claim 27, wherein the upper and lower clamping abutment surfaces have the form of V-shaped grooves.

31. A cutting tool assembly comprising:

a cutting insert holder; and

a cutting insert;

the cutting insert holder comprising:

an upper clamping jaw having an upper clamping surface;

a lower base jaw having a lower clamping surface;

an insert holder inner side surface extending between the upper and lower clamping surfaces; and

an insert pocket bound on two opposite sides by the upper and lower clamping surfaces and bound on a third side extending between the two opposite sides by the insert holder inner side surface; the insert holder inner side surface being provided with a positioning member;

the cutting insert comprising:

a central body portion extending in a longitudinal direction of the cutting insert between two opposite end portions, each end portion being provided with a cutting edge; the central body portion being provided with sloped upper and lower clamping abutment surfaces which define therebetween a variable distance, the sloped upper and lower clamping abutment surfaces having first and second side surfaces extending therebetween; at least one of the first and second side surfaces being provided with an axial location member,

wherein the upper clamping abutment surface is configured to abut the upper clamping surface; the lower clamping abutment surface is configured to abut the lower clamping surface and the positioning member is configured to engage the axial location member to thereby fix the axial location of the cutting insert; and

wherein the axial location member and the positioning member are shaped so as to permit sliding insertion and removal of the cutting insert into the insert holder, along said longitudinal direction.

32. A cutting insert in accordance with Claim 31, wherein, when the cutting insert is viewed in an end view, the distance between the upper and lower clamping abutment surfaces is a maximum at the first side surface and a minimum at the second side surface.

33. A cutting insert in accordance with Claim 31, wherein the upper and lower clamping abutment surfaces have the form of V-shaped protrusions.

34. A cutting insert in accordance with Claim 31, wherein the upper and lower clamping abutment surfaces have the form of V-shaped grooves.

Appendix B - Declaration of Uzi Gati

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Uzi Gati

Application No.: 09/873,331 Group Art Unit: 3712

Filed: June 5, 2001 Examiner: Jacob ACKUN

For: CUTTING TOOL ASSEMBLY Attorney Docket No.: 10236-0027

DECLARATION OF UZI GATI UNDER 37 CFR ' 1.132

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

I, Uzi Gati, hereby declare that:

1. I am a citizen of Israel and reside at 47 Mishol Moran, Karmiel, Israel.

2. I have been employed by Iscar Ltd. for 15 years and I have a total of 20 years' experience in the design, development and production of metal cutting inserts and metal cutting tools.

3. I am the inventor of the above-identified patent application.

4. I have read the October 18, 2002 Office Action in the above-identified patent application and USP 4,509,886 to "Lindsay", which is cited in the Office Action.

5. In paragraph 2 of the October 18, 2002 office action, the Examiner seems to imply that it would be obvious to switch the keyway 38 formed in Lindsay's cutting insert 32 with the transversely extending hole 28 and 'locating key or pin 26' formed in the tool holder's insert receiving slot. I do not agree with this. What the Examiner suggests would require one to form a transversely extending hole in the cutting insert 32 and insert a pin 26 into the

newly formed transversely extending hole in the cutting insert. This would result in a cutting insert that is more costly to manufacture and more cumbersome to use.

6. Switching the keyway 38 formed in Lindsay's cutting insert 32 with the tool holder's transversely extending hole 28 and 'locating key or pin 26' would not result in a cutting insert that could be inserted and removed in a longitudinal direction, since the keyway's vertically oriented channel would prevent such longitudinal movement.

7. Lindsay's keyway, in all embodiments, has a vertically oriented channel. This aids in preventing longitudinal movement of the insert relative to the tool holder, a goal that Lindsay repeatedly emphasizes. Re-orienting the channel so that it assumes a horizontal orientation would be contrary to Lindsay's apparent goal.

8. I further declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Date: 20.1.03

Uzi Gati